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ABSTRACT

The origins of error analysis as a pedagogical tool can be traced to the beginnings of the notion of interference and the use of contrastive analysis (CA) to predict learners' errors. With the focus narrowing to actual errors committed by students, it was found that all learners of English as a second language seemed to make errors in the same areas, regardless of their native language background. The shift from the behaviorist to the cognitivist theory of language learning became the basis for research on language acquisition and error analysis. Error analysis uses CA in those instances where errors can be attributed to interference. Teachers wishing to do an error analysis should: (1) collect a representative sampling of students' language; (2) identify and catalogue the errors found in the sampling; (3) determine a hierarchy of errors; (4) select errors to be corrected; (5) adapt or write materials for the corrections to be made; and (6) correct the selected errors consistently. (AM)

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"ERROR ANALYSIS" A Hard Look at Method in Madness

BY

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My family used to tell a story that for a long time I thought belonged exclusively to the small town from which I came. It dealt with a boy that the entire town considered simple-minded. It seems that one time someone offered him a choice between a nickel and a dime and he was foolish enough to take the nickel presumably because it was larger. Of course this foolishness delighted the offerer of the choice and so he told the story all around town and other people started to offer the boy the same choice. Sure enough--every time the boy would take the nickel and the story would be rejuvenated and go around again with everyone getting a lot of laughs at the boy's expense. Finally, someone began to feel sorry for the boy and took him aside. "Look," the friend said, "even though the nickel is larger, it isn't worth as much as the dime." "Oh, I know that," the boy replied. "Well then, why do you keep taking the nickel?", the perplexed helper queried. "Because if I took the dime," the boy replied, "they'd stop offering me money."

Occasionally in the academic world we find ourselves in the shoes of those who laughed at the boy who chose the nickel.

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We are so sure of our superior knowledge that we do not see the greater wisdom that lies in what we consider "madness." This has been the case with student errors for quite a long while. We have been so sure that they were undesirable that we have spent long hours as teachers and course writers trying to find out how to prevent, squelch, and/or eliminate them. It is only in recent years that someone has been so foolish as to stand back far enough to discover that there can be some value in errors. This look from a distance has resulted in a new tool valuable to teachers, psychologists, and linguists. The tool is known as "error analysis."

HOW ERROR ANALYSIS DEVELOPED

Error analysis can be understood better if placed in its historical context. One of the first steps leading to the development of error analysis was the development of contrastive analysis. Contrastive analysis was a method suggested first by Lado in his 1957 book Linguistics Across Cultures. In that book Lado stated that one of the main hindrances to the learning of a second language was the presence of the first language. He suggested that first language habits "interfered" with the making of second language habits and that whenever a second language learner had a doubt about a word or a structure, he would fall back on his first language

and substitute its words or structures into the second language. This would, of course, result in errors. Lado theorized that language teaching could be improved if areas of difference between the first language and the language being learned could be identified. After these areas were identified, the teacher could organize teaching materials so that the problem areas would be drilled longer and more intensively than other areas so that the habits in the second language would be reinforced enough to overcome the habits of the first language. Lado's ideas were tied to Skinnerian behavioral theories.

The contrastive analysis that Lado suggested was accepted readily because teachers of languages could see that language learners did make errors which seem systematic in nature and linked to the first languages of the language learners. Linguists also immediately got into the study especially in making contrastive analyses of phonology. In making these analyses it wasn't necessary to pay any attention at all to what the second language learner was actually doing. All that was necessary was to analyze what native speakers of each language could be compared with the language habits of the native speakers of the second lan-

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guage. This comparison would reveal the areas where differences occurred and those areas would be the ones predicted to give learners the most problems as they moved from language one to language two.

Some of the results of contrastive analyses were very important. For example, vast amounts of careful language analysis took place and many good materials were written particularly in the area of phonology. But by the middle of the 1960's there were rumblings in the area of contrastive analysis. It predicted so many possible problems that teachers were still having to select which areas to teach. Furthermore, they were discovering that many areas which were supposed to be problems caused no trouble at all while errors were occurring in areas that contrastive analysis had never predicted.

Finally teachers began to ask, "Why do a complete predictive contrastive analysis at all if you have to verify the predictions anyway? Why not just look at the errors students actually make, find the areas the errors occur in, and contrast only those areas?"¹ This was the beginning of true error analysis.

As teachers and linguists turned their focus to the errors that

students actually commit, they discovered that those errors were systematic. In other words, most learners made the same type of errors. For example, the investigators found that many, many students of English as a second language would make statements like **"She pretty"* or **"He heavy"* where the BE verb is omitted while it would be a real idiosyncrasy if a student were to produce a statement such as **"She remember pretty,"* where some other verb was substituted for the BE verb.

The fact that errors seemed to occur more often in certain areas seemed to be the same no matter what language the learner spoke as his native language! It was true that speakers of particular languages would make certain errors more often than speakers of other languages, but errors of that nature only made up a small number among all of the errors committed. In fact, when initial statistical studies were done on the matter, at least for children learning English as a second language, it appeared that only three to four percent of the total number of errors made could be attributed to interference from the first language. Ninety-six to ninety-seven percent of all errors of these second language learners had to be attrib-

¹D.A. Wilkins, "Review of A. Valdman, *Trends in Language Teaching*," *IRAL*, 6 (1968), 102.

*Denotes a sentence which would not be considered correct by native speakers of a language.

uted to some other cause.²

At the same time that teachers and linguists were turning from contrastive analysis to an examination of the actual mistakes that language students make, psychologists and psycholinguists were turning from behaviorist theory which says that language learning is habit formation to cognitivist theory which says that language learning is the internalization of rules. A corollary to the cognitivist theory was that the rules of a language were internalized in a systematic manner.

The cognitivist theory became the basis of research into the acquisition of the first language. It also became the basis for the process of error analysis. Error analysis presupposes that the learner processes data, storing them in some kind of organized system. Part of the data processing requires using the data and getting feedback on that use to confirm storage of the data in the proper place in the system. If the data are not stored properly, errors occur. Errors, then, can be taken as a sign that processing (or learning) is taking place. (This is a happy note for teachers on those days in the classroom when it seems nothing is taking place.)

²Heidi C. Dulay and Marina K. Burt, "Goofing: An Indicator of Children's Second Language Learning Strategies," Language Learning, 22, 249.

In brief, then, as error analysis developed, it was different from contrastive analysis in the following major ways:

1) "Error analysis does not assume that first language interference is the major predictor of adult errors."³

2) Error analysis attempts to deal only with those errors that actually do occur rather than to predict in advance what will occur.

3) While contrastive analysis suggests that the first language is a problem causer, error analysis suggests that the first language can reduce the load of learning a second language because the learner already has some knowledge of a language system.⁴ In other words, contrastive analysis looks at the differences between languages and says they will cause problems, and error analysis looks at the similarities and says they will aid learning.

Error analysis does not replace contrastive analysis; rather it uses contrastive analysis as an aid in those areas where errors can be attributed to interfer-

³Marina K. Burt, "Error Analysis in the Adult EFL Classroom," TESOL Quarterly, 9 (March 1975), 54.

⁴S.P. Corder, "The Significance of Learner's Errors," IRAL 5, 168.

ence from the first language. For example, contrastive analysis is good for revealing why speakers of Czech have trouble with the English article--there is no parallel system in Czech.⁵ Contrastive analysis is also good for explaining errors which occur in word order and prepositions when speakers of other languages learn English. It is not very accurate in predicting what kind of errors will occur with the verb tenses, however.⁶

THE VALUE OF ERROR ANALYSIS

Error analysis has shown itself to be very valuable in many areas. To begin with, it has helped linguists and psycholinguists to understand the nature of language learning. As mentioned previously, it has helped foster the idea that language learning is systematic with the system relying very little on the method by which the language is presented to the learner. In other words, it doesn't matter if the teacher uses a strict pattern presentation or a very free conversation method or no method at all. The learner will probably learn the constructions of the language

in about the same order as every other learner of that language. (This idea should not be misunderstood. How a teacher teaches may not affect the order in which things are learned, but it can affect how fast the learner moves through the acquisition order.)

An example from first language learning may help make this idea clear. Studies have shown that no matter where a child learns English, if he is a normal child, at about the age of three he will have acquired enough knowledge to produce the question, "Can he go?" He will not be able, however, to produce the question, "Where can he go?," but will substitute, "Where he can go?," when the second question is called for. Of course, there are some children who can produce the second question at age three, but it is almost universally certain that those children learned to produce the first question first and that at some time in their language learning they were able to produce the first question correctly and not the second.⁷

Although few studies are conclusive at this point, on-going

⁵Libuse Dusková, "On Sources of Errors in Foreign Language Learning," IRAL 7, 29.

⁶Ibid., p. 23.

⁷Jack C. Richards, "Error Analysis and Second Language Strategies," Language Sciences 17 (October 1971), 13.

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research indicates that the same kind of acquisition order exists for English as a second language. This acquisition order does not seem to be identical with the order for learners of English as a first language, but it seems to be a definite order.

In other languages, linguists have also found natural acquisition orders. Each language seems to share some aspects of its acquisition order with all languages while differing from each in other particular aspects. The acquisition order of each language seems to be guided by the system of that individual language and not by the circumstances of learning or by languages already learned.⁸

Another interesting idea that error analysis has produced is the theory that some aspects of a language are learned more quickly at certain stages of human development. Tentative conclusions from current studies, for example, seem to indicate that adults are the best vocabulary learners; teenagers seem to be excellent learners of syntax; and children ages seven to eight seem to be the best

learners of phonology.⁹

Error analysis has also changed the views of linguists regarding language learning being an imitative process. The very fact that children produce sentences with errors indicates that they are not imitating because their models are not producing the same errors. Just think, for example, how long you would have to wait for an adult native speaker of English to say, "Where he can go?"¹⁰

One of the most interesting things that error analysis has revealed is the mind as an "efficiency-seeking" mechanism. The kind of errors that second language learners make seem to imply that the mind rejects not only irregularities in the language system, but also redundancies.¹¹

⁹Susan Ervin-Tripp, "Is Learning a Second Language Really like Learning a First?," TESOL Quarterly 8, 122-123.

¹⁰S. P. Corder, "The Significance of Learner's Errors," IRAL 5, 167.

¹¹H. V. George, Common Errors in Language Learning, (Rowley, Massachusetts: 1972), pp. 5, 6, 56.

⁸Heidi C. Dulay and Marina K. Burt, "Goofing: An indicator of Children's Second Language Learning Strategies," Language Learning 22, 242.

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It seems to seek the most meaning with the least effort.

Error analysis also holds value for teachers. Obviously, errors are a good indication to a teacher of what the student has learned. They are an unofficial test that sorts out what has been absorbed from what has not been absorbed. In addition, they are an indication of the exact state of what Corder calls the learner's "transitional competence." That is they reveal if a student has formulated a rule but has not developed the habit of applying the rule. At least this is what error analysts suggest is happening when a student recognizes and corrects his own mistakes. How close the student is to having the rule habituated can even be indicated by whether he recognizes his own error alone or if he has to have some indication from outside that the error has been made before he corrects it.¹²

Error analysis has a lot to say to course and curriculum developers as well. What it reveals about natural acquisition order probably suggests something about what might be a nat-

ural course outline.¹³ The nature of the curriculum should also be influenced by what error analysis has revealed about language learning. For example, because we know that the mind systematizes input, why not make its job easier by systematizing what we present. And since we know the mind is efficiency seeking, we should present new items in settings which are as "non-redundant" as possible so that the mind accepts them as meaningful and useful. For example, in ESL, we would not present the simple past tense verbs in settings such as "Yesterday I studied," because the time word, "yesterday," and the past tense would be in danger of being rejected by the efficiency seeking mind.

Another bit of knowledge about the mind that has implications for teachers is that in seeking a system, the mind forms a hypothesis, tests it, and then accepts and stores it as fact, or rejects it and forms a new hypothesis. Hypothesizing, then is good and guessing is the testing of hypotheses. George suggests that this implies that guessing should be fostered in

¹²S. P. Corder, "The Significance of Learner's Errors," IRAL 5, 167.

¹³Marina K. Burt, "Error Analysis in the Adult EFL Classroom," TESOL Quarterly 9, (March 1975), 62.

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the language classroom.¹⁴

One final thing that error analysis suggests to the teachers is that we should capitalize on natural learning capacities of the different ages. With children, we should put more emphasis on phonology. With teenagers, we can stress syntax development, and with adults, we can lean a little more heavily on vocabulary.

The person for whom error analysis has the most value, however, is the learner. The learner benefits because error analysis turns the whole idea of course structure around. Rather than having an outline of grammatical aspects that the teacher thinks the student should learn, the course would have an outline of grammatical aspects that the student's errors indicate he is working on and ready to learn. The curriculum would be "learner-based" rather than "teacher-based."¹⁵

Error analysis also makes learning easier because it fosters awareness in the teacher of his position as a sounding board for hy-

potheses. The teacher knows that his reception of an item or rejection of it may very well cause it to be permanently stored or rejected in the student's system. The teacher becomes more conscious of what is being tested and helps the student by giving more directed and less arbitrary feedback.

Because the teacher is selective in his corrections, the student is encouraged by being able to communicate more while being corrected less. Frustration is lessened considerably and the student desires to continue learning.

HOW TO DO AN ERROR ANALYSIS

An error analysis can be done in myriad ways so what is presented here is simply a mixture of the most common qualities or techniques used in the most methods. It should provide a skeleton system which anyone can modify for his own situation.

The first step in performing an error analysis is to collect data. This simply means to get some samples of what your language learners are saying or writing. You should try to get about the same number of sentences or utterances from each student so that you will have a representative sampling. If you want to emphasize writing

¹⁴H. V. George, Common Errors in Language Learning, (Rowley, Mass., 1972), pp. 15, 19, 36-37, 57.

¹⁵S. P. Corder, "The Significance of Learner's Errors," IRAL 5, 166.

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skills, collect writing samples. If you want to emphasize speaking skills, collect speaking samples on tape or by phonetic transcription or by both. Grammatical structures can be analyzed from either speaking or writing.

If you want to be more uniform about the gathering of your samples, you could use a group of pictures as stimulus for the utterances or writing. You will also want to record information about each student such as age, sex, length of time in the language program, outside contact with the language, etc.

The second step, and probably one of the most difficult in the process, is to identify and catalogue the errors. The following sentence collected from the writings of a learner of English as a second language will give you some idea why: "He joined the army and begin to contend the Dutch for to freedom his country together with the young man." What exactly are the errors? What classes or categories would you put them in? What kind of classes or categories are there for that matter?

There is help for getting out of this dilemma. In English as a second language, at least, several books have been published

which list types of errors by categories. Burt and Kiparsky's The Gooficon catalogs errors according to grammatical structure. H. V. George's book, Common Errors in Language Learning catalogs errors by their probable causes. Similar books are usually available for other languages. If you can't find one, catalog the errors according to your own system. (It may be the start of your own book later on.)

The third step in error analysis is to determine a hierarchy of errors. How to determine this seems to be one of the points that the experts least agree on. Basically there are three ways that this might be done. The first is to simply take a count of how many errors of each kind occur. This is the method which occurs to most teachers first and it does have value. Certainly there is something annoying about an error that occurs ten times in one paper or one conversation. A word of caution must be issued on the simple numerical count method, however. Sometimes a certain structure will appear more frequently than usual simply because the stimulus for the communication required it. Also, errors with certain items, such as the articles in English, are bound just by the very nature of the language to appear more frequently than other errors, such as simple present, although one

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error with the simple present may hinder communication much more than ten errors with articles. A possible way to temper some of the imbalance of a simple count of errors is what Brown calls the obligatory occasion. With obligatory occasion method, the number of errors with any given structure is placed over the number of times that the given structure was called for (the obligatory occasion) in the sample collected. If the structure was not used, or if it was misused, it is an error. This method gives a percentage of error for each structure or item.¹⁶

Hopefully another way to temper numerical count will be with us soon. If linguists can categorize the language sufficiently, possibly we will have a structure frequency count much as we have word frequency counts at present. If this occurs, we will simply be able to compare the numerical ranking of errors with their numerical ranking of frequency to judge if we have a proportionally high number of errors in one area.

The second method of establishing a hierarchy of errors is the one that Burt advocates in her article

¹⁶Heidi C. Dulay and Marina K. Burt. "Natural Sequences in Child Second Language Acquisition," Language Learning 24 (June 1974), 43.

on error analysis in the TESOL Quarterly. She suggests that the errors be ranked according to how much they hinder communication. To determine this communication hindrance factor she suggests that you take any utterance or sentence and make a series of sentences from it, each with only one error corrected. The series of sentences is then presented to native speakers and they are asked to rank the sentences on the basis of their "nearness" to the native language with a "1" being nearest. Figure 1 gives an example of one such series for a sentence written by a student learning English.

FIGURE 1

ORIGINAL: He made me to know what difference between like and love.

CORRECTED: He made me know what the difference between like and love is.

- ___ A. He made me know what difference between like and love.
- ___ B. He made me to know what the difference between like and love.
- ___ C. He made me to know what difference between like and love is.

The original sentence is listed first, then a guess of what the original means. This corrected

version is a personal addition because it seemed that simply presenting the series of partially corrected sentences would not be unbiased as information from the first sentences about what the entire sentence meant would influence how well the native speaker understood the later sentences. After the corrected version comes the series of sentences each with only one error of the original corrected as Burt suggested.

After several native speakers have ranked the sentences, you take a mean ranking for each corrected sentence. The sentence with the lowest mean ranking has the error corrected which is most bothersome. In other words, once the error which most hinders communication is corrected, native speakers will find the sentence "nearest" the native language. A hierarchy of those errors actually committed can thus be established. (Although such a ranking has not been done, it seems that eventually for each language a series of sentences should be contrived which will yield a complete hierarchy of errors and not just a hierarchy for a particular group of errors.)

Another method which could be used to determine your hierarchy would be the acquisition order hierarchy. Once research in

this area is more refined you could simply look at where the error area is on the acquisition order chart and decide that an error in a structure usually acquired earlier would be more serious than an error in a structure usually acquired later. Such charts are not available in all languages at present but soon should be as research in this area is vigorous.

Once you have your hierarchy established, take the fourth step in error analysis--select which errors to correct. Since you already have a hierarchy established of which errors you think are the "worst," this step should be easy. The biggest part of this step now is to decide how many errors to correct at one time. You may decide to work on one error per day or one error per week. Your knowledge of the nature of your class and their needs and desires should influence how many you select.

The fifth step in the error analysis process is to adapt or write materials for the corrections you are going to make. There are a couple of things that you could do as you plan these materials. You could plan to completely represent the structure as if you had never taught it before. If you choose this method (presumably because the students show complete lack of understanding),

don't present the structure in the same way as you did previously. Obviously, it didn't work or the error wouldn't be occurring. You might also want to take the psychological cause of the error into account. If you think that students are getting interference from their native language, the lesson might make differences and reasons for the differences plain. If it appears that the structure has been rejected for redundancy reasons, find a way to teach it so that it becomes meaningful by itself.

You may not feel that an entire re-presentation is necessary. Maybe you think that your students understand the rule but are simply not applying it habitually. You might write or adapt drills to get automatic application or you might plan activities which call for self-monitoring such as having the students read through their own papers looking carefully for a particular error (and not just for all errors).

Your plans may even include just a simple strategy for what you are going to do when the error occurs again, such as have the student make a formal apology (in a ritualistic manner) and then correct the error, or charge the student a nickel, etc. This type of plan will bring consistency to correction and may focus

enough attention on the error that the student will soon correct it by himself.

The final step in error analysis is to correct the selected errors. This means to be consistent. Correct the error every time it occurs and don't correct errors which have not been selected. If you wander off into the correcting of all errors, the cost factor becomes too high for the student. He loses too much communication in trying to correct everything and so he quits correcting anything. However, if your corrections are selective and consistent, the student should begin to see that his communication can be improved easily by correcting only a few things. Progress will be made and confidence will be fostered and this, after all, is the whole purpose of doing an analysis.

Error analysis is still fairly new and much refinement remains to be done. However, if initial indications are a true sign of what is to come it seems to promise that there is a way to bring order out of seeming chaos, learning out of error, and meaningful method out of madness.

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